REMARKS

Note that claims 37, 104, and 108 have been amended. Appendix A contains a marked up copy of the amended claims.

Note that new claims 149-180 have been added.

Support for new claim 149 can be found in Fig. 357.

Support for new claim 150 can be found in Figs. 357 and 359.

Support for new claim 151 can be found in Fig. 357.

Support for new claim 152 can be found in Fig. 357.

Support for new claim 153 can be found in Figs. 18, 145, and 357.

Support for new claim 154 can be found in Figs. 18, 145, and 357.

Support for new claim 155 can be found in Figs. 328, 349, 357, and at pages 27-28.

Support for new claim 156 can be found in Figs. 18, 145, and at pages 27-35.

Support for new claim 157 can be found in Figs. 18, 145, and at pages 35-36.

Support for new claim 158 can be found in Figs. 159 and 223.

Support for new claim 159 can be found in Figs. 18, 179, and at pages 34-35.

Support for new claim 160 can be found in Figs. 18, 179, and at pages 34-35.

Support for new claim 161 can be found in Fig. 20 and at pages 27-28.

Support for new claim 162 can be found in Fig. 20 and at pages 27-28.

Support for new claim 163 can be found in Figs. 20, 145, and at pages 27-28.

Support for new claim 164 can be found in Figs. 20, 357, and at pages 27-28.

Support for new claim 165 can be found in Figs. 277 and 280.

Support for new claim 166 can be found in Figs. 18, 357, and at pages 27-28.

Support for new claim 167 can be found in Figs. 136, 141, and 145.

Support for new claim 168 can be found in Figs. 91 and 92.

Support for new claim 169 can be found in Figs. 145 and 180.

Support for new claim 170 can be found in Figs. 145 and 280.

Support for new claim 171 can be found in Fig. 351.

Support for new claim 172 can be found in Fig. 351.

Support for new claim 173 can be found in Figs. 328 and 332.

Support for new claim 174 can be found in Fig. 357.

Support for new claim 175 can be found in Fig. 357.

Support for new claim 176 can be found in Figs. 357 and 359.

Support for new claim 177 can be found in Fig. 357.

Support for new claim 178 can be found in Figs. 357 and 359.

Support for new claim 179 can be found in Figs. 18, 134, and at pages 27-35.

Support for new claim 180 can be found in Figs. 18, 134, and at pages 27-35.

Support for new claim 181 can be found in Figs. 328, 349, 357, and at pages 27-28.

Support for new claim 182 can be found in Figs. 328, 349, 357, and at pages 27-28.

Support for new claim 183 can be found in Fig. 351.

Support for new claim 184 can be found in Fig. 357.

Support for new claim 185 can be found in Fig. 357.

Note that the specification has been amended. Appendix B contains a marked up copy of the specification. The specification has been amended to correct minor editorial errors.

Note that figures 137, 179, 223, 224, 234, 239, and 265 have been amended, and that amended drawings have been submitted by an accompanying letter to the patent office draftsperson.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 12-0415. In particular, if this response is not timely filed, the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136(a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith

may be charged to deposit account no. 12-0415.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C., 20231 on:

April 1, 2002
(Date of Deposit)

Ross A. Schmitt
(Name of Applicant, Assignee or Registered Representative)

Ross A. Schmitt
(Signature)

4-1-2002
(Date)

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MARKED UP VERSION TO SHOW CHANGES MADE

37. (Twice Amended) A terminal-to-terminal communication connection control method with employment of an IP transfer network as claimed in claim 36, wherein:

when the telephone set on the transmission source side requests a telephone call setting operation, the telephone set on the transmission source side exclusively determines a circuit identification code used to identify a communication line for telephone voice from a set of the destination telephone number and the source telephone number;

the telephone administration server on the transmission source side transmits an IAM packet containing said circuit identification code for requesting the telephone call setting operation to the telephone administration server on the destination side;

the telephone administration server on the destination side returns an ACM packet for reporting the reception of said IAM packet to the telephone administration server on the transmission source side;

when the telephone set on the destination side produces a telephone call reception sound, the telephone management server on the destination side transmits a CPG packet for notifying a call reception to the telephone administration server on the transmission source side;

when the telephone set on the destination side responds to the call setting request, the telephone administration server on the destination side transmits an ANM packet indicative of a response to the call setting request to the telephone administration server on the transmission source side, and then, the telephone set on the transmission source side stops the calling sound thereby allowing to enter a communication phase;

when communication is completed and when a call-interrupting request is transmitted, the telephone administration server on the call-interrupting request said forms a REL packet requesting the completion of telephone communication using the circuit identification code and transmits the [REL] RLC packet to the telephone administration server on the call-interrupted side; and

said telephone administration server on the call-interrupted side returns an

acknowledgement reporting the reception of the REL packet.

104. (Twice Amended) A terminal-to-terminal communication connection control method with employment of an IP transfer network as claimed in claim 9, wherein:

when an IP packet including a multicast IP packet as a receiver address is detected;

said IP packet is abandoned; and

thereby to exclude an IP packet concentration for the [receiver] sender.

Please amend claim 108 to read as follows:

108. (Twice Amended) A multicast communication system with employment of an IP transfer network, wherein:

an IP transfer network has one network node apparatus or more,

said network node apparatus has a first function to form an internal [IP] packet by encapsulating an external IP packet inputting from said IP transfer network and a second function to restore to said external IP packet and output to outside by decapsulating said internal [IP] packet,

said internal [IP] packet is transferred in said IP transfer network passing one or more router having multicast function,

one or more terminal connected to said network node apparatus via IP communication line has peculiar external IP address and has one or more multicast IP address defined for respective multicast services,

multicast data sent from terminal of multicast sending side is transferred in said IP transfer network, and

said terminal is capable of receiving one or more multicast services by sending said multicast data to said terminal.

MARKED UP VERSION TO SHOW CHANGES MADE

Please amend the paragraph bridging pages 4 through 6 to read as follows:

The destination point code shows a destination to which a signalling unit is transmitted, the origin point code indicates a transmission source of a signalling unit, and the circuit identification code represents an identification number for identifying a communication line set between a [transmission source signal] original point and a destination [signal] point. As the message, for example, there are IAM, ACM, CPG, ANM, REL, RLC, SUS, RES and CON, which are used to control terminal-to-terminal communication connections. Such a signalling unit which is written as "IAM" into a message area of the signalling unit is referred to as an initial address message (IAM). Similarly, such a signalling unit which is written as "ACM" into the message area of the signalling unit is referred to as an address completion message (ACM), such a signalling unit which is written as "CPG" into the message area of the signalling unit is referred to as a call pass message (CPG), and also such a signalling unit which is written as "ANM" into the message area of the signalling unit is referred to as [an answering] a response message (ANM). Similarly, such a signalling unit which is written as "REL" into the message area of the signalling unit is referred to as a release message (REL), such a signalling unit which is written as "RLC" into the message area of the signalling unit is referred to as a release completion message (RLC), and also such a signalling unit which is written as "SUS" into the message area of the signalling unit is referred to as an interrupt message (SUS). Similarly, such a signalling unit which is written as "RES" into the message area of the signalling unit is referred to as a restart message (RES), and such a signalling unit which is written as "CON" into the message area of the signalling unit is referred to as a connection message (CON).

Please amend the first whole paragraph at page 6 to read as follows:

Referring now to FIG. 2, a description will be made of a method for controlling a terminal-to-terminal connection control by which a telephone communication is established from the telephone set 98-4 via the exchangers 98-1, 98-2, 98-3 to the telephone set 98-5, as shown in FIG. 2. It should be noted that the respective signalling points exchange such a signalling unit via the signal lines 98-24 to 98-27 and the common [line] channel signalling network 98-16 to each other. In the signalling unit, the signalling point codes applied to the respective signalling points are set as addresses indicative of designations and transmission sources. The telephone set 98-4 is connected via the telephone line 98-20 to the exchanger 98-1. The terminal-to-terminal connection control of the telephone set 98-4 is loaded to the signalling point 98-12 within the exchanger 98-1. Similarly, the telephone set 98-5 is connected via the telephone line 98-23 to the exchanger 98-3. The terminal-to-terminal connection control of the telephone set 98-5 is loaded to the signalling point 98-14 within the exchanger 98-3.

Please amend the first whole paragraph at page 9 to read as follows:

When the signalling point 98-14 within the exchanger 98-3 receives information for implying such a fact that the calling request is being received from the telephone set 98-5 (Step X7), the signalling point 98-14 transmits [the] a call pass message (CPG) to the signalling point 98-13 (Step X8). The signalling point 98-13 transmits the received CGP to the signalling point 98-12 (Step X9). The signalling point 9-12 within the switching point 98-1 receives the CPG message. Next, the signalling point 98-12 sends a calling sound to the telephone set 99-4 (Step X10). When the telephone set 98-5 responds to the above-described call setting request (Step X11), the telephone communication line 98-23 between the telephone set 98-5 and the exchanger 98-4 can be used for the telephone communication, and further [the] a response message (ANM) for indicating that the telephone set 98-5 responds to the call setting request is sent to the signalling point 98-13 (Step X12).

Please amend the paragraph bridging pages 9 through 11 to read as follows:

The signalling point 98-13 transmits the received ANM to the signalling point 98-12 (Step X13), the signalling point 98-12 notifies stopping of the calling sound under transmission to the telephone set 98-4 (Step X14), and thus, telephone voice (speech) can be transmitted/received between the telephone set 98-4 and the telephone set 98-5. The operation is advanced to a telephone communication phase (Step X15). In the case that the handset of the telephone set 98-4 is put on (on-hook), [the release] a clear request [(REL)] is sent out (Step X16), and the signalling point 98-12 receives the [release] clear request [(REL)], the signalling point 98-12 sends out a [next] release request (REL) to the signalling point 98-13 (Step X17), and furthermore, notifies to the telephone set 98-4, such a [release] clear completion [(RLC)] for indicating that the telephone communication line is brought into an empty state (Step X18). Then, upon receipt of the release request (REL), the signalling point 98-13 sends out the next release request (REL) to the signalling point 98-14 (Step X19), and further, notifies such a release completion (RLC) for indicating that the telephone communication line is brought into the empty state to the signalling point 98-12 (Step X20). Then, upon receipt of the release request (REL), the signalling point 98-14 sends out [the next release request (REL)] a clear indication to the telephone set 98-5 (Step X21), and further, notifies such a release completion (RLC) for indicating that the telephone communication line is brought into the empty state to the signalling point 98-13 (Step X22). Then, the telephone set 98-5 notifies a clear completion to the signalling point 98-14 (Step X23). There are several variations in the sequential operations of the terminal-to-terminal communication connection controls which are transmitted/received between the telephone set 98-4 and the signalling point 98-12, and also between the signalling point 98-14 and the telephone set 98-15, depending upon sorts of telephone sets. For instance, a confirmation notification with respect to a [release] clear completion may be issued from the telephone set 98-4 to the signalling point 98-12 just after the above-explained Step X18. Alternatively, a confirmation notification with respect to the release completion may be issued from the signalling point 98-14 to the telephone set 98-5 just after the Step X23.

Please amend the first whole paragraph on page 13 to read as follows:

Next, with respect to the IP telephone communication, there is proposed "multimedia communication system based on JT-H323" of TTC standard, which is described in, for instance, ITU-T recommendation H323 ANNEX D regulation (version of [April] September, [1999] 1998). The technical idea "SIGNALLING PROTOCOL AND PACKETING OF MEDIA SIGNAL" by which the call connections are controlled in the multimedia terminal-to-terminal communication is defined as JT-H225. Also, the technical idea "CONTROL PROTOCOL FOR MULTIMEDIA COMMUNICATION" in the multimedia terminal-to-terminal communication is defined as JT-H245.

Please amend the paragraph bridging pages 39 and 40 to read as follows:

when the second user hangs up the telephone set and an IP packet for acknowledgement of completed telephone communication is generated and sent with a source IP address as being the second IP address and a destination IP address as being the first IP address, the IP packet passes through the second H323 termination unit, the second network node apparatus, the more than one router inside the IP transfer network and the first network node apparatus, and reaches the first H323 termination unit; when telephone communication is completed between the first dependent type IP telephone set and the second dependent type IP telephone set and an IP packet for transmitting the second dependent type IP telephone set from the H323 termination unit, the IP packet passes through the network node apparatus and the more than one router inside the IP transfer network and reaches another network node apparatus connected to the second dependent type IP telephone set, and the IP packet enters another media router via a communication line thereby enabling the same to reach the second dependent IP telephone set via the H323 termination unit; the IP packet reaches another second network node apparatus connected to the second dependent IP telephone set via the first network node apparatus and more than one routers inside the IP transfer network and arrives via the communication line at a

second H323 termination unit which is inside another second router and connected to the second [type] dependent type telephone set;

Please amend the Description of the drawings on page 65 to read as follows:

FIG. 231 is an explanatory diagram for explaining the 13th embodiment of the present invention;
FIG. 232 is an explanatory diagram for explaining the 13th embodiment of the present invention;
FIG. 233 is an explanatory diagram for explaining the 13th embodiment of the present invention;

Please amend the paragraph bridging pages 85 and 86 to read as follows:

The terminal 2352-2 transmits an IP packet having a transmission source address "EA1" and a destination address "EA2". On receiving the IP packet, regardless of the internal address assigned to the logical terminal at the termination end of the communication line to which the IP packet is inputted, the network node apparatus 2355-2 confirms that the transmission source external IP address of the IP packet is "EA1", and that the destination external IP address is "EA2". The network node apparatus then searches the inside of the address administration table 2357-2. In this example, the result is the record "EA1, EA2, IA2" in the first line of the address administration table 2357-2. By using the address "IA2" within the record, a simple header is added to the IP packet, whereby an internal packet 2354-2 is formed (simple encapsulation). The formed internal packet 2354-2 goes through the communication line and then reaches the network node apparatus 2356-2. The network node apparatus 2356-2 removes the simple header of the received internal packet [2354-1] 2354-2 (simple decapsulation), and then sends out the obtained external IP packet to the communication line. The IP terminal 2353-2 then receives the restored IP packet.

Please amend the first whole paragraph on page 86 to read as follows:

The terminal 2352-3 transmits an IP packet having a transmission source address "EA1" and a destination address "EA2". On receiving the IP packet, regardless of the internal address assigned to the logical terminal at the termination end of the communication line to which the IP packet is inputted, the network node apparatus 2355-3 confirms that the destination external IP address of the IP packet is "EA2". The network node apparatus then searches the inside of the address administration table [2357-1] 2357-3 thereby to find a record having the destination external IP address "EA2". In this example, the result is the record "EA2, IA2" in the first line of the address administration table [2357-1] 2357-3. By using the address "IA2" within the record, a simple header is added to the IP packet, whereby an internal packet 2354-3 is formed (simple encapsulation). The formed internal packet 2354-3 goes through the communication line and then reaches the network node apparatus 2356-3. The network node apparatus 2356-1 removes the simple header of the received internal packet 2354-3 (simple decapsulation), and then sends out the obtained external IP packet to the communication line. The IP terminal 2353-3 then receives the IP packet.

Please amend the paragraph bridging pages 113 and 114 to read as follows:

Next, the H323 termination unit 23-1 transmits an IP packet 46-4 to a domain name server 48-1 employed inside the media router 14-1 of FIG. 23 (Step ST23). The IP packet 46-4 stores thereinto the address of the dependent type IP telephone set 13-1, namely a transmission source IP address "A131"; the address of the domain name server 48-1, namely a destination IP address "A481"; and a telephone number "Tel-13-2 name" of a communication counter party. The domain name server 481 checks the content of the received IP packet 46-4, and subsequently, transmits an IP packet 46-5 via the communication line 10-1 and the network node apparatus 8-2 to the domain name server 31-1 dedicated to the IP telephone network (Step ST24). When the domain name server 31-1 dedicated to the IP telephone network returns such an IP packet 46-6 to the domain name server 48-1 (Step ST25), the domain name server 48-1 returns an IP packet [46-6] to the H323 termination unit 23-1. The above-explained returned IP packet contains an IP

address "A132" which corresponds to the host name "Tel-13-2 name" in a 1-to-1 correspondence manner.

Please amend the paragraph bridging pages 114 and 115 to read as follows:

Referring now to FIG. 24, the following operation is made: The IP packet 46-8 produced in the first procedure is transmitted via the communication line 10-5 (Step ST27), the network node apparatus 7-2, and the IP telephone network 4 to the network node apparatus 8-2, and then is reached via the communication line 10-1 to the router 20-3 and also via the H323 termination unit 23-1 to the dependent type IP telephone set 13-1[, respectively]. The dependent type IP telephone 13-1 interprets that the communication counter party is being called by receiving the IP packet 46-8.

Please amend the paragraph bridging pages 121 and 122 to read as follows:

Since an IP packet is transmitted, or received from the dependent type IP voice/image (audio/visual) apparatus 16-1 to the dependent type IP voice/image (audio/visual) apparatus 16-3, a host name for identifying an apparatus can be realized by a voice/image communication for transmitting/receiving an IP packet. The communication procedure is similar to that defined from the Step ST20 to the Step ST32 in which both the dependent type IP telephone set 13-1 and the dependent type IP telephone set 13-2 use the domain name server 31-1 dedicated to the IP telephone network. As a technical different point, while the domain name server 32-1 dedicated to the IP voice/image network 5-1 of FIG. [24] 20 is employed without using the domain name server 31-1 dedicated to the IP telephone network, a process operation of a Step ST44 is executed instead of the Step ST24, and also a process operation of a Step ST45 is executed instead of the Step ST25.

Please amend the paragraph bridging pages 123 and 124 to read as follows:

By connecting the independent type IP voice/image apparatus 16-4 with the [network node apparatus 7-4] gateway 9-2 of FIG. 20, the voice/image communication to transmit/receive the IP packet is carried out between the independent type IP voice/image apparatus 12-3 and the independent type IP voice/image apparatus 16-4 via the network node apparatus 8-4, the IP voice/image network 5-1, [and] the network node apparatus 7-4 and gateway 9-2.

Please amend the paragraph bridging pages 125 and 126 to read as follows:

Next, when a user of the analog telephone set 18-1 dials a telephone number of the analog telephone set 18-3 as a communication counter party, the analog telephone set 18-1 sends out a call setting analog signal to the communication line 55-1, and the SCN interface 23-1 produces a data block 47-3 of FIG. 52 for notifying the telephone number by using the "call setting" analog signal to send out the data block 47-3 to the H323 termination unit 23-1 (Step ST62). In this case, the H323 termination unit 23-1 retrieves records contained in a media router state table 100-1 of FIG. 47 so as to detect a line identifier indicative of the communication line 55-1, a record on a third row of the media router state table 100-1 from a top row, namely "55-1". Next, the H323 termination unit 23-1 reads a telephone number "81-47-325-3887" of the analog telephone set 18-1 and an IP address "20.0.55.1", which are described in the record. In this case, a concrete numeral value of the IP address "A181" of the analog telephone set 18-1 is selected to be "20.0.55.1"[(Step ST62)].

Please amend the paragraph bridging pages 128 and 129 to read as follows:

Because of the second procedure, the user of the analog telephone set 18-3 hears the telephone call sound, and then takes up the handset of the analog telephone set 18-3 (off hook). As a result, the H323 termination unit 23-2 produces an IP packet 47-9 (Step ST68). The H323 termination unit 23-2 sends out the IP packet 47-9 to the router 20-4. Then, the IP packet 47-9 is

supplied via the network node apparatus 7-2 and the IP telephone network 4 to the network node apparatus 8-2, and is reached via the communication line 10-1 to the router 20-3, and also via the H323 termination unit 23-1 and the SCN interface 24-1 to the analog telephone set 18-1. As a result, the user of the analog telephone set 18-1 may be informed as sound for notifying that the telephone communication counter party takes up the handset of the analog telephone set 18-3. This sound is to confirm a [call setting operation] response.

Please amend the first whole paragraph on page 129 to read as follows:

The above-described Step ST68 corresponds to such a procedure that information of a [call setting confirmation] response is transferred, namely, the IP packet 47-9 is transferred which notifies such a fact that the telephone communication is commenced between the analog telephone set 18-1 and the analog telephone set 18-3. When both the network node apparatus 7-2 and 8-2 detect the IP packet 47-9, a record of the commencement of the telephone communication may be saved in a charge record file. In other words, such a fact that the telephone communication is commenced between the analog telephone sets 18-1 and 18-3 is saved in the charge record file. Namely, this charge record file stores thereinto a portion of the contents of the IP packet 47-9 set into the network node apparatus, for example, a transmission source IP address, a destination IP address, a transmission source port number, a destination port number and detection time instants thereof.

Please amend the second whole paragraph on page 168 to read as follows:

An IP address "EA01" is applied to the media router 212-1, and an IP address "EA02" is applied to the media router 212-2. A representative telephone number "Tel-No-1" is applied to the telephone sets 213-4 to 213-6, a representative telephone number "Tel-No-2" is applied to the telephone sets 214-4 to 214-6, and extension telephone numbers "2132", "2133", "2142" and "2143" are applied to the telephone sets 213-2, 213-3, 214-2 and 214-3, respectively.[In this

example, no telephone communication is established by the extension telephone sets 213-2 and 213-3 from the media router 212-1 to a telephone set provided on the side of the IP telephone network 203. Similarly no telephone communication is established by the extension telephone sets 214-2 and 214-3 from the media router 212-2 to a telephone set provided on the side of the IP telephone network 203.]

Please amend the first whole paragraph on page 176 to read as follows:

In the case that the user picks up the handset of the telephone 213-5 (off hook), dials the telephone number of "Tel-No-2" of the telephone set 214-4 functioning as the communication counter party, and then transmits the inputted telephone number to the media router 212-1 (Step P200), the media router [212-2] 212-1 [responds to this telephone number] replies (Step P201).

Please amend the paragraph bridging pages 176 and 177 to read as follows:

Next, the media router 212-1 produces such an IP packet (refer to 379 of FIG. 96) which contains at least the transmission source telephone number "Tel-No-1", the destination telephone number "Tel-No-2", and the user identification information (User-Info.), and then transmits the IP packet to the network node apparatus 208-1, so that the media router 212-1 commences a procedure of telephone call setting operation (Step P204). It should be noted that the user identification information (User-Info.) may be delivered to the media router 212-2 at a Step P219 (will be explained later). This user [identification] individual information is constituted, for example, by a telephone call identifier "C-id" used to manage[, for example,] a telephone call on the user side[; an identification symbol for a voice (speech) compression system of an IP telephone;] and an identification symbol of a voice (speech) compression or a voice coding codec system for an IP telephone[a voice code conversion codes]. A payload portion of an IP packet 379 shown in FIG. 96 may be used as an UDP segment. For instance, both a transmission source port number and a destination port number may be employed as "5060" in order that a program

for controlling the telephone communication connection provided inside the media router 212-1 and 212-2 is discriminated from other programs.

Please amend the paragraph bridging pages 189 and 190 to read as follows:

Referring now to FIG. 103 to FIG. 106, a communication phase will be described. Voice entered into the telephone set 213-5 is transferred to a media router 212-1 (Step P300), and the media router 212-1 digitalizes the voice to form an IP packet 387, and transmits the IP packet 387 to the network node apparatus 208-1 (Step P301). The IP packet 387 is capsulated and then is converted into an internal IP packet 388. This internal packet 388 is reached via a communication line 370-3; routers 219-5, 219-7, 221-1, 219-10 and 219-9; a communication line 370-6 to a network node apparatus 209-2 (Step P302). Then, the IP packet 387 is inverse-capsulated by removing the IP header to be converted into an IP packet 389. This IP packet 389 is delivered via a media router 212-2 (Step P303) to a telephone set 214-4 (Step P304). Voice of a user of the telephone set 214-4 is transferred along a direction opposite to the above-explained direction. In other words, the voice of the user of the telephone set 214-4 is reached via the media router 212-2 (Step P305), the network node apparatus 209-2 (Step P306), and the routers 219-9, 219-10, 221-1, 219-7, 219-5 to the network node apparatus 208-1 (Step P307), and then is delivered via the media router 212-1 (Step P308) to a telephone set 213-5 (Step P309).

Please amend the first whole paragraph on page 198 to read as follows:

A series of all telephone communication preparations of the communication company "2" are changed into those of the communication company "1". Among a series of the above-explained steps described in both the telephone communication connection phase and the telephone communication release phase, the communication established between the telephone administration server 313-5 and the telephone administration server 314-5 is left, and a series of the processing steps which are carried out by both the representative server 313-7 of the

communication company 1 and the representative server 314-7 of the communication company 2 are omitted. Moreover, such a telephone administration server may be formed by employing the telephone administration server 313-5 and the telephone administration server 314-5. As a result, in the above-described telephone communication connection phase, the Steps P214X, P224X, P234X, P245X, P254[X] indicated in FIG. 109 are omitted; the Steps P217, P223, P233, P244, P250, P251 become P217x, P223x, P233x, P244x, P250x, P251x shown in FIG. 110, respectively; and other Steps shown in FIG. 109 are identical to those of FIG. 110.

Please amend the paragraph bridging pages 204 and 205 to read as follows:

The contents of the embodiment 6 will now be summarized with supplemental information as follows: That is, the IP transfer network contains at least the network node apparatus, the telephone administration server, [the media router,] the telephone domain name server and the table administration server. A user "i" (i=1, 2, 3, . . .) sets the individual external IP address "EA-i" to the media router of the user located outside the IP transfer network, one, or more telephone sets are connected to the media router of the user "i", and the media router is connected via the communication line to any one of the network node apparatus. An internal IP address "IA-i" used for the communication of the user "i" is applied to the termination unit (logic terminal) on the side of the network node apparatus of the communication line, and also the telephone number of the individual user is applied to the media router. Also, the telephone domain name server holds the set constituted by the telephone number of the individual user; the external IP address "EA-i" of the media router; and the internal IP address "IA-i". When the telephone domain name server is inquired as to the telephone number of the individual user, the telephone domain name server responds both the external IP address and the internal IP address, and also sets the IP communication record for determining the IP communication path established between the media router and the telephone proxy server into the network node apparatus.

Please amend the paragraph bridging pages 213 and 214 to read as follows:

The telephone communication between two analog telephone sets may be established by a function of an analog interface unit 532. The IP telephone sets 515-1 to 515-4 digitalize voice, and superimpose the digitalized voice on an IP packet to thereby send the IP packet, and also restore the digitalized voice to obtain analog voice as a reverse function. The analog interface unit digitalizes the voice received from the analog telephone sets 516-1 to 516-3 and then sends the digitalized voice to the media router major unit 531, and also restores the digitalized voice received from the media router major unit 531 to obtain analog voice as a reverse function thereof, and then supplies the analog voice to the analog telephone set.

Please amend the paragraph bridging pages 221 and 222 to read as follows:

Another user 1062 proposes the telephone acceptance person 1063 to receive a telephone service in a similar manner. As indicated in FIG. 118, an IP communication record is set between the media router 1022 having the external IP address "EA2" and the media router 1021 having the external IP address "EA1" within the network node apparatus 1032 in a similar procedure (namely, Steps A110 to A119 of FIG. 116). In accordance with the same principle idea, an IP communication record between the media router 1022 having the external IP address "EA2" and the media router 1023 having the external IP address "EA3" is set, [or] and another IP communication record is set [between the media router 1022 having the external IP address "EA2" and the media router 1023 having the external IP address "EA3"] as shown in the [first] second record to the fourth record of the address administration table 1035. Instead of the above-described procedure in which the user 1062 proposes to telephone acceptance person 1063 so as to set the IP communication record between the media router 1022 and the media router 1021, another user 1060 may propose another telephone acceptance person 1061 so as to set an IP communication record between the media router 1022 and the media router 1021. As a result, when the telephone administration server 1042 executes the above Step "A107", this server simultaneously executes the step "A117-2" (refer to FIG. 116) in order to request the table

administration server 1066 to set the IP communication record.

Please amend the paragraph bridging pages 224 and 225 to read as follows:

In the above-explained retrieving operation of the IP communication record within the address administration table in the beginning, the network node apparatus 1031 retrieves such an IP communication record whose transmission source internal IP address is equal to "IA1" (plural subjects and present), and subsequently, retrieves as to whether or not the destination external IP address "EA2" is contained in the IP communication record within the detected IP communication record. Alternatively, such a retrieve operation of the transmission source external IP address "EA1" may be omitted. When the IP packet is capsulated, both the transmission source IP address "IA1" of the internal IP address and the destination IP address "IA2" are set to the IP address area of the header portion of the internal IP packet. The formed internal IP packet 1071 is transmitted to the network node apparatus 1032 (Step A205), and is reached via the routers 1035-1 [to] and [1035-6] 1035-7 to the network node apparatus 1032. The network node apparatus 1032 executes the inverse-capsulation of the IP packet except for the header of the IP packet 1071 so as to restore an IP packet 1072 (refer to FIG. 122). Then, this IP packet 1072 is sent to the media router 1022 (Step A206).

Please amend the paragraph bridging pages 230 and 231 to read as follows:

Upon receipt of the external IP packet 1073, the network node apparatus 1031 may find out the IP communication record equal to "EA1, EA2, IA1, IA2" inside the address administration table, while using the IP communication record, the external IP packet 1073 is capsulated to constitute an internal IP packet 1074. The internal IP packet 1074 is reached via the routers 1035-1 to 1035-6 to the network node apparatus 1032 (Step A252). Then, the external IP packet 1075 is restored, and the external IP packet 1075 is delivered via the media router administration unit 1057 (Step A253) to the telephone set 1012 (Step A254). An IP

packet containing the voice of the user of the telephone set 1012 is transmitted along a direction opposite to the above-explained direction, namely is reached via the media router administration unit 1057 (Step A260), the network node apparatus 1032 (Step A261), and the routers [1035-6] 1035-7 [to] and 1035-1 to the network node apparatus 1031 (Step A262), and also is delivered via the media router administration unit 1056 (Step A263) to the telephone set 1011 (Step A264).

Please amend the paragraph bridging pages 247 and 248 to read as follows:

Upon receipt of the IP packet 1134, the network node apparatus 1101 produces an internal IP packet 1140 by applying the capsulation method of the IP packet, while using the IP communication record indicated on the second row of the address administration table 1110 from the top row, namely "EA1, EA3, IA1, IA3", and then transmits the IP packet 1140 to the network node apparatus 1103 (Step A305). The internal IP packet 1140 is reached via the routers 1105, 1106, 1107 to the network node apparatus 1103. Then, the network node apparatus 1103 restores an IP packet 1134 by executing the inverse-capsulation method of such an IP packet except for a header thereof, and then sends the restored IP packet 1134 to the media router administration unit [1117] 1119 (Step A306). A series of these Steps A304, A305, A306 is called as a "call setting operation", and is expressed by "IAM" as an abbreviation symbol.

Please amend the first whole paragraph on page 250 to read as follows:

When the user of the telephone set 1121 starts a telephone conversation by voice (speech), a voice signal is sent to the media router management unit 1138 (Step A350 of FIG. 137). Then, this media router administration unit 1138 stores the voice signal digitalized by the telephone control unit 1133 into a payload portion [of an] in the internal UDP segment of the IP packet, and thereafter the resulting IP packet is transmitted to the network node apparatus 1101 (Step A351). In the connection phase, as [an internal transmission source] the port numbers [of]

in the UDP segment, both the source port number "5004" and the destination port number "5006" acquired in the connection phase are utilized.

Please amend the paragraph bridging pages 255 and 256 to read as follows:

FIG. 142 represents the system of the above-explained telephone numbers as a tree structure of telephone numbers. Reference numeral 1185 shows a route domain, reference numeral 1186 indicates a domain directed to the non-opened extension telephone number of the company "A", and reference numeral 1187 shows a domain directed to the opened telephone number of the company "A", and reference numeral 1188 indicates a domain made of the opened telephone number of the company "B", and also reference numeral 1189 is a domain directed to the opened telephone number of the company "C". In this case, a domain name "##" of the reference numeral 1186 corresponds to a secret domain name which is used only in the media routers 1195, 1191, 1193 and 1197 belonging to the company "A". The secret domain name contains no numeral, and the length of the secret domain name is determined as such a long name of 20 characters. As explained above, any one can hardly know and/or acquire the value of the secret domain name "##", or the secret domain name "##" itself which is exclusively used by the company "A" from the media routers 1192, 1194, 1196 of the company "B" and the company "C". For example, no IP address is answered with respect to the inquiry "##". As a result, safety characteristics may be improved in view of the following implication. That is, a telephone user of either the company "B" or the company "C" can hardly access the telephone set having the extension telephone number of the company "A", namely can hardly use the extension telephone number.

Please amend the first whole paragraph on page 256 to read as follows:

When the user of the telephone set 1198 dials the destination telephone number "2-145", the media router administration unit 1195-1 provided in the media router 1195 converts the

telephone number "2-145" into "1.2." corresponding to the domain name of the telephone number, as indicated in a conversion table 1185-1 of FIG. 143. Next, when the user of the telephone set inquiries by indicating the domain name format "1.2." to the telephone number server 1195-2 of the media router 1195, the telephone number server 1195-2 answers an IP address ["MR2"] of the media router 1192 corresponding to "1.2.", as indicated in a table 1185-2 of FIG. 144.

Please amend the paragraph bridging pages 282 and 283 to read as follows:

At the Step V34, [the telephone administration server 1274 acquires] with regards to the line number "CIC-2" [from] corresponding to the IP packet which passes through the telephone administration server 1274, [and] the telephone administration server 1274 finds out such a record that the line number is "CIC-2" from the CIC administration table 1326-2 owned by the telephone administration server 1274 so as to derive the IP addresses "EA2", "EA1", "IA2", "IA1" from the record content. Then, the telephone administration server 1274 transmits the derived IP addresses to the table administration server 1276 (Step V42). The table administration server 1276 sets these transmitted IP addresses as a record "EA2, EA1, IA2, IA1" indicated on a second row of the address administration table 1254 provided in the network node apparatus 1247 (Step V43).

Please amend the paragraph bridging pages 287 through 289 to read as follows:

When the operation administration server 1277 employed in the IP transfer network 1200 inquires to the telephone administration server 1271 every a properly determined time instant, or a properly selected time interval (Step V200 of FIG. 179), the operation administration server [1277] 1271 detects such a record that a telephone communication is ended by considering as to whether or not an end time instant is written into the CIC administration table 1236-1. Then, the operation administration server [1277] 1271 notifies a telephone communication record such as a

transmission source telephone number, a destination telephone number, a starting time instant, and an end time instant to the [telephone] operation administration server [1271] 1277 (Step V201). The operation administration server [1277] 1271 deletes a record of the CIC administration table 1326 in which a telephone communication is ended. Similarly, when the operation administration server 1277 employed in the IP transfer network 1200 inquires to the telephone management server 1274 (Step V202 of FIG. 179), the [operation] telephone administration server [1277] 1274 detects such a record that a telephone communication is ended by considering as to whether or not an end time instant is written into the CIC administration table 1326-2. Then, the [operation] telephone administration server [1277] 1274 notifies a telephone communication record such as a transmission source telephone number, a destination telephone number, a starting time instant, and an end time instant to the [telephone] operation administration server [1274] 1277 (Step V203). The [operation] telephone administration server [1277] 1274 deletes a record of the CIC administration table 1326-2 in which the telephone communication is ended. As previously explained, the operation administration server can acquire the record of the telephone communication via the telephone administration server, namely, the transmission source telephone number, the destination telephone number, the starting time instant, the end time instant, which may be used in the charging operation of the telephone communication. The acquisition of the telephone communication instants may be selectively carried out.

Please amend the paragraph bridging pages 294 and 295 to read as follows:

FIG. 183 indicates an embodiment in which the Step V25 is carried out by way of the TCP communication. That is, while the telephone administration server [1271] 1274 transmits a TCP packet 1390-3 containing an SYN designation used to establish a TCP connection to the telephone administration server [1274] 1271, the telephone administration server [1274] 1271 responds a TCP packet 1391-3 containing an ACK indication of a communication start acknowledgment, and then the telephone administration server [1271] 1274 transmits a TCP

packet 1392-3 to the telephone administration server [1274] 1271 (Step V25t). The TCP packet 1392-3 contains the same content (notification of call passing CPG) as that of the IP packet 1333. Next, the telephone administration server [1271] 1274 transmits a TCP packet 1393-3 containing an FIN designation used to end the TCP connection to the telephone administration server [1274] 1271, and the telephone administration server [1274] 1271 returns a TCP packet 1394-3 for an end confirmation to the telephone administration server 1271.

Please amend the first whole paragraph on page 295 to read as follows:

FIG. 184 indicates an embodiment in which the Step V35 is carried out by way of the TCP communication. That is, the telephone administration server [1271] 1274 transmits a TCP packet 1392-4 to the telephone administration server [1274] 1271 (Step V35t). The TCP packet 1392-4 contains the same content (notification of [call passing] response ANM) as that of the IP packet 1334. The TCP communication can be carried out in a similar manner to that of other communication methods. FIG. 185 shows an embodiment in which the step V64 is carried out byway of a TCP communication. That is, the telephone administration server 1271 transmits a TCP packet 1392-5 to the telephone administration server 1274. The TCP packet 1392-5 contains the same content (notification of release REL) as that of the IP packet 1337 (Step V64t). The TCP communication can be done in a similar manner to that of other communication methods.

Please amend the second whole paragraph on page 296 to read as follows:

The IP packets 1322, 1327, 1328, 1331, 1332-2, 1333, 1333-1, 1334, 1337 and 1338 used in the terminal-to-terminal connection control are transferred to a range 1289 (refer to FIG. 187) of [any of] IP communication lines which connect the telephone proxy server 1270, the telephone administration server 1271, the telephone administration server 1274, and the telephone proxy server 1275. On the other hand, the IP packets 1335 and 1336 used in the voice communication

are transferred to a range 1293 (refer to FIG. 187) of IP communication lines which connect the network node apparatus 1244, the router 1291, the router 1292, and the network node apparatus 1247. The IP communication lines employed in the terminal-to-terminal connection control correspond to a line of a common line signal network of a switched communication network, whereas the communication lines used in the voice communication correspond to a voice communication line of a switched communication network.

Please amend the paragraph bridging pages 299 and 300 to read as follows:

A table 1255-1 of FIG. 192 represents such a method that a media router administration unit 1260 converts telephone numbers into domain names, and these telephone numbers are telephone communication counter party of the telephone sets 1208 to 1211 connected to the media router 1201. For instance, a telephone number "1XX" of a first row of the table 1255-1, e.g., a telephone number "1001" is represented by a telephone number domain name "1. a."; a telephone number "2XXX" of a second row of the table 1255-1 is expressed by a telephone number domain name "b."; and another telephone number of a seventh row of the table 1255-1 is represented by a telephone number domain name "[0] Q.", respectively. Other rows of this table are expressed in a similar manner. In accordance with the table 1255-2 of FIG. 193, for example, the telephone number server 1137 responds the IP address "EA1" when the telephone number domain name "1.a." is inquired; the telephone number server 1137 responds the IP address "EA5" when the telephone number domain name "b." is inquired; and the telephone number server 1137 answers the IP address "EA81" when the telephone number domain name "[0] Q" is inquired.

Please amend the paragraph bridging pages 300 and 301 to read as follows:

A table 1256-1 of FIG. 194 represents such a method that a media router administration unit 1264 converts telephone numbers into domain names, and these telephone numbers are telephone communication counter party of the telephone sets 1228 to 1231 connected to the media router

1203. For instance, a telephone number "1XXX" of a first row of the table 1256-1 is represented by a telephone number domain name "1.a."; a telephone number "1XX" of a second row of the table 1256-1 is expressed by a telephone number domain name "1.#.a."; and another telephone number of a fifth row of the table 1256-1 is represented by a telephone number domain name "[0] Q.", respectively. Other rows of the table are expressed in a similar manner. In accordance with the table 1256-2 of FIG. 195, for example, the telephone number server 1142 responds the IP address "EA1" when the telephone number domain name "1.a." is inquired; the telephone number server 1142 responds the IP address "EA5" when the telephone number domain name "1.#.a." is inquired; and the telephone number server 1142 answers the IP address "EA81" when the telephone number domain name "[0] Q." is inquired.

Please amend the paragraph bridging pages 301 and 302 to read as follows:

A table 1257-1 of FIG. 196 represents such a method that a media router administration unit 1266 converts telephone numbers into domain names, and these telephone numbers are telephone communication counter party of the telephone sets 1220 to 1223 connected to the media router 1205. For instance, a telephone number "1XXX" of a first row of the table 1257-1, is represented by a telephone number domain name "a."; a telephone number "2XXX" of a second row of the table 1257-1 is expressed by a telephone number domain name "b."; and another telephone number of a fourth row of the table 1256-1 is represented by a telephone number domain name "[0] Q.", respectively. Other rows of the table are expressed in a similar manner. In accordance with the table 1257-2 of FIG. 197, for example, the telephone number server 1140 responds the IP address "EA1" when the telephone number domain name "a." is inquired; the telephone number server 1140 responds the IP address "EA5" when the telephone number domain name "b." is inquired; and the telephone number server 1140 answers the IP address "EA81" when the telephone number domain name "[0] Q." is inquired.

Please amend the paragraph bridging pages 303 and 304 to read as follows:

[The operations of the tenth embodiment will now be further summarized.] That is, the IAM packet, the ACM packet, the CPG packet, the ANM packet, the REL packet and the RLC packet are transmitted/received between the telephone administration server provided on the telephone calling side and the telephone administration server provided on the call receiving side. In the closed-area telephone communication for limiting the telephone communication parties, the telephone number server provided inside the media router is employed. Also, in the open-area telephone communication not for restricting the telephone communication parties, since the telephone number server employed in the media router is used, the telephone number server employed in the IP transfer network is employed. In the open-area telephone communication, the IP communication line employed in the terminal-to-terminal connection control can be separated from the communication line used in the voice communication. While the telephone administration server contains the CIC administration table, the telephone administration server can record the transmission source telephone number, the destination telephone number, the starting time instant of the telephone communication, and the end time instant thereof. The operation administration server inquiries the telephone administration server so as to acquire the transmission source telephone number, the destination telephone number, the starting time instant of the telephone communication and the end time instant thereof, which may be used in the charging operation.

Please amend the paragraph bridging pages 329 and 330 to read as follows:

As the another control method, "output line information provided inside IP transfer network" is inquired to the telephone number server by showing the destination telephone number, and then, the telephone number server [responds] replies the IP address. The "input line information provided inside IP transfer network" corresponds to the signal station code of the gateway having the NNI communication line outside the IP transfer network. The "output line information provided outside IP transfer network" corresponds to the IP address to the gateway having the

NNI communication line outside the IP transfer network.

Please amend the paragraph bridging pages 330 and 331 to read as follows:

Then, the exchanger 558 transmits both the transmission source telephone number 03-1111-2222" and the destination telephone number "092-555-6666" to the gateway 550 containing the line information (Step K04). Referring to the IP transfer network input line table 584 within the gateway 550 containing the line information, the gateway 550 containing the line information finds out one telephone number "03-4444-4000" as access information, and then notifies the found telephone number to the exchanger 558 (Step K05). This access information is used for the gateway for connecting the communication line to such a telephone set whose destination telephone number is "092-555-6666". Next, the exchanger 558 seeks such an exchanger connected to the gateway telephone number "03-4444-4000", namely, finds out the exchanger 560 in this case. Then, the exchanger 558 transfers to the exchanger 560, [such] namely information containing the telephone number "03-4444-4000", functioning as the access information to the gateway and acquired in the above procedure, the transmission source telephone number "03-1111-2222", and the destination telephone number "092-555-6660" (Step K06). The exchanger 560 transfers both the transmission source telephone number "03-1111-2222" and the destination telephone number "092-555-6666" via the UNI communication line 580 to the gateway 552 to which the telephone number "03-4444-4000" is applied (Step K07). The gateway 552 reports to the exchanger 560, such a fact that these two telephone numbers are received (Step K08).

Please amend the paragraph bridging pages 333 and 334 to read as follows:

The exchanger 563 transfers a call setting request which contains the transmission source telephone number "03-1111-2222" and the destination telephone number "092-555-6666" to the exchanger 564 (Step K14). The exchanger 564 returns such a fact that the above-explained cal setting request is received to the exchanger 557 (Step K16 to Step K22). Next, the exchanger 564

calls the telephone set 572 (Step K15), and the telephone set 572 notifies the calling operation to the exchanger 564 (Step K24). The exchanger 564 notifies the calling operation of the destination telephone set 572 to the transmission source telephone set 570 (Step K25 to Step K32). When the telephone set 572 is taken up (off hook) (Step K33), such a notification indicative of a telephone communication commencement response is notified to the transmission source telephone set 570 (Step K35 to Step K42), so that the telephone communication is commenced.

Please amend the paragraph bridging pages 342 and 343 to read as follows:

When the telephone communication is ended, a telephone call release notification is transmitted from the telephone set 570 to the exchanger 557 (Step L45), and then, a call release completion notification is returned from the exchanger 557 to the telephone set 570 (Step L46). Both the notification of the call release and the notification of the call release completion are issued, so that the connection between the telephone set 570 and the exchanger 557 is released. Subsequently, releasing of the communication connection is performed in such a manner that the call release notification and the call release completion notification are sequentially transmitted/received among the exchanger 557, the exchanger 560, the gateway 552, the telephone administration server 549-3, the telephone administration server 549-3, the media router 591 and the telephone set 573 (Steps L47 to L[60] 56).

Please amend the paragraph bridging pages 346 and 347 to read as follows:

As to an IP packet PCK-1 which is transmitted from the gateway 552-1 to the gateway 554-1, a transmission source IP address thereof is "a", and a destination IP address thereof is "b". When the IP packet PCK-1 is reached to the network node apparatus 543-1, the address management tables 543-1T is considered. In this embodiment, since the three sets of front three IP addresses "a", "b", "x" among the internal information "a", "b", "x", "y" are made coincident with the three IP addresses contained in the IP packet PCK-1 another IP packet "y" contained inside the

address administration table 543-1T and an IP capsulation operation for applying an IP header is carried out, so that a new IP packet PCK-2 is formed. The IP packet PCK-2 is transmitted from the network node apparatus 543-1 to a communication line, and then, is reached via the routers 547-1 and 548-1 to the network node apparatus 545-1. In this network node apparatus 545-1, an inverse-capsulation operation is carried out so as to remove the IP header which has been applied by the above-explained IP capsulation operation. As a result, an IP packet PCK-3 is restored, and then is sent via the communication line to the gateway 554-1. The address administration table 545-1T is used so as to transmit the IP packet along a direction opposite to the above-explained direction.

Please amend the paragraph bridging pages 348 and 349 to read as follows:

As to an IP packet PCK-11 which is transmitted from the gateway 552-2 to the gateway [554-2] 543-2, a transmission source IP address thereof is "a", and a destination IP address thereof is "b". When the IP packet PCK-11 is reached to the network node apparatus 543-2, the address administration table 543-2T is considered. In this embodiment, since "a" of the internal information is made coincident with the transmission source IP address contained in the IP packet PCK-11, it can be understood that the IP packet PCK-11 is transferred into the IP transfer network 540. Next, the IP packet PCK-11 may be directly changed into an IP packet PCK-12. The IP packet PCK-12 is sent from the network node apparatus 543-2 to the communication line, and then is reached via the routers 547-2 and 548-2 to the network node apparatus 545-2. In this case, since the destination IP address "b" of the IP packet PCK-12 is recorded, in the address administration table 545-2T, the IP packet PCK-12 is directly sent as an IP packet PCK-13 via the communication line to the gateway 554-2. Both the network node apparatus 543-2 and 545-2 may confirm such a permission that the IP packet is accepted within the IP transfer network 540-2. Otherwise, both the network node apparatus 543-2 and 545-2 may confirm that the IP address "b" is present outside the IP transfer network 540-2. The IP addresses of the gateways are featured to be registered/held into the address administration tables

employed in the network node apparatus 543-2 and 545-2.

Please amend the first whole paragraph on page 358 to read as follows:

Upon receipt of the IP packet 1534 (refer to FIG. 223) (Step N09), the relay control unit 1513 derives from the IP packet 1534, the transmission source IP address "IA91", the destination IP address "GW03", the line number "CIC-2", the procedure segment "IAM", the transmission source telephone number "TN-1", the destination telephone number "TN-2", both the external IP address "EA1" and the internal IP address "IA1" of the media router 1560, the voice communication port number "5006"[, both the external IP address "EA81" and the internal IP address IA81 of the pilot telephone server 1570]. The relay control unit 1513 writes/records the derived items as a record of a CIC administration table 1513-1 (refer to FIG. 224) managed by the relay control unit 1513 in combination with a time instant "St-3".

Please amend the first whole paragraph on page 362 to read as follows:

The relay control unit 1513 receives the internal IP address [of the voice control unit 1516] "IA3", the [transmission source] external IP address "EA3" and the port number "5008" of the UDP packet provided in the speech control unit from the voice control unit 1516, and writes these addresses and the port number into the CIC management table 1513-1 (refer to FIG. 224). The resultant content is indicated in the CIC administration table 1513-2 (refer to FIG. 234). In this table, the address of the telephone proxy server is not contained. The voice control unit 1516 previously holds one, or more internal IP address of the vice control unit 1516, while one of these internal IP addresses is used as the above-explained internal IP address "IA3".

Please amend the paragraph bridging pages 365 and 366 to read as follows:

The relay control unit 1513 derives the IP addresses "EA3", "EA1", "IA3", "IA1" from the

internal record of the CIC administration table 1513-3 (refer to FIG. 239) at the Step N33, and then transmits the derived IP addresses to the table administration server 1576 (Step N41). The table administration server 1576 sets the received IP addresses as IP communication records "EA3, EA1, IA3, IA1" of the address administration table provided in the network node apparatus 1547 (Step N42). It should be understood that both the record format of the address administration table and the address setting method to the record have already been explained in other embodiments.

Please amend the first whole paragraph on page 366 to read as follows:

Similarly, the telephone administration server 1571 derives the IP addresses "EA1", "EA3", "IA1", "IA3" from the internal record of the CIC administration table [1513-3] 1571-2, and then transmits the derived IP addresses to the table administration server 1573 (Step N43). The table administration server 1573 sets the received IP addresses as IP communication records "EA1, EA3, IA1, IA3" of the address administration table provided in the network node apparatus 1544 (Step N44).

Please amend the paragraph bridging pages 366 through 368 to read as follows:

The voice (speech) signal of the telephone set 1508 is digitalized, and the digitalized voice data is described on the payload of the IP packet 1561 (refer to FIG. 243). In this case, both the destination address and the UDP port number, which are acquired in the above-explained connection phase are employed. In other words, the transmission source address corresponds to the IP address "EA1" of the media router 1560, the destination address corresponds to the IP address "EA3" of the voice control unit 1516 connected to the destination telephone set 1520, "5006" is employed as the UDP port number used in the voice transmission by the media router 1560, and also "5008" is employed as the UDP port number used in the voice transmission by the voice control unit 1516. The analog voice is sent from the telephone set 1508, and the analog

voice is digitalized to become a voice IP packet 1561 (refer to FIG. 243) in the media router 1560, and then the voice IP packet 1561 is sent to the network node apparatus 1544. In this network node apparatus 1544, the digital voice data is capsulated to become an IP packet 1562 (refer to FIG. 244) by using the IP communication records "EA1, EA3, IA1, IA3", and then, the IP packet 1562 is reached via the voice IP communication line, and the router 1524 to the network node apparatus 1547. The network node apparatus 1547 inverse-capsulates the internal IP packet 1562 by using the above-described IP communication records "EA3, EA1, IA3, IA1" to produce an IP packet 1563 (refer to FIG. 245). The IP packet 1563 into which the digitalized voice is stored is reached to the voice control unit 1516. The voice control unit derives the transmission source IP address "EA1", the transmission source port number "5006", the destination IP address "EA3", and the destination port number "5008", which are contained in the IP packet 1563, and also refers to the media path connection table 1528-3 (FIG. 233). While using a media path record equal to the transmission source IP address "EA1", the transmission source port number "5006", the destination IP address "EA3", and the destination port number "5008", the digitalized voice contained in the IP packet 1563 is converted into a speech (voice) frame 1564 (FIG. 246) having a format transferred to the voice communication line 1506. The speech frame 1564 is reached via the exchanger 1518 to the exchanger 1519, so that voice is outputted from the telephone set 1520. The voice stored in the speech frame sent from the telephone set 1520 is transferred along a direction opposite to the above-explained direction to be reached to the telephone set 1508.

Please amend the paragraph bridging pages 373 and 374 to read as follows:

In FIG. 249, reference numeral 1400 shows an IP transfer network, reference numerals 1401 and 1402 represent relay gateways, reference numeral 1403 shows a termination gateway equipped with a capsulation function, reference numerals 1405 to 1407 represent public switched telephone networks (PSTN), reference numerals 1408 to 1411 show subscriber exchangers, reference numerals 1412 and 1413 denote relay exchangers, reference numerals 1415 and 1416 represent control communication lines by the common line signal system, and reference numerals

1417 and 1418 indicate voice (speech) communication lines. Also, a set of the control communication line 1415 and the voice communication line 1417 are an NNI communication line between the exchanger 1412 and the relay gateway 1401, whereas a set of the control communication line 1416 and the voice communication line 1418 is are an NNI communication line between the exchanger 1413 and the relay gateway 1402. Reference numerals 1438 and 1439 show address connection tables. Reference numerals 1441 and 1442 indicate gateway address administration server ("DNS-1" in FIG. 273) and reference numerals 1443 and 1444 indicate signal station address administration server ("DNS-2" in FIG. 274). Also reference numerals 1429 and 1430 show media path connection tables. In the present invention, a point provided in the common line signal system is expressed by a signal station, and a point code is represented by a "signal station address".

Please amend the paragraph bridging pages 379 and 380 to read as follows:

Referring now to FIG. 249, a cooperation between the relay control unit and the voice control unit will be described. The relay control unit 1423 indicates the media path identifier "MP-8" via the information line 1429-1 to the voice control unit 1427 (Step 1423-1 of FIG. 268). The voice control unit 1427 secures an internal IP address "IA5", an external IP address "EA5" and a voice communication port number "5010" of an internal module of the voice control unit 1429 used for the voice communication, and notifies to the relay control unit 1423 via the information line 1429-1 (Step 1427-1). Furthermore, the voice control unit 1427 determines a logic communication line identifier "CH-1" used to identify a logic communication line for transmitting a voice frame to the voice communication line 1417, a logic communication line identifier "CH-2" for identifying a logic communication line used to receive a voice frame from the voice communication line 1417, and writes the logic communication line identifiers "CH-1" and "CH-2" into the media path connection table 1429. The written result is indicated in a media path connection table [1429-1] 1429-1x (refer to FIG. 265).

Please amend the first whole paragraph on page 384 to read as follows:

The media path connection table 1430-1 owns the following implication: When such an IP packet (payload is UDP) which contains the transmission IP address "EA5", the transmission source port number "5010", the destination IP address "EA6", and the destination port number "5012" and also the IP capsulated packet of which the transmission source IP address is "IA5" and the destination IP address is "IA6", are received the digitalized voice contained in this UDP payload is transmitted to the logic communication line of the identifier "CH-3" of the logic communication line 1418. Also, when the digitalized voice is received from the logic communication line of the identifier "CH-4", the digitalized voice is stored into such an IP packet (payload is UDP) is received which contains the transmission IP address "EA6", the transmission source port number "5012", the destination IP address "EA5", and the destination port number "5010", and then, the IP packet is converted into the IP capsulated packet of which the transmission source IP address is "IA5" and the destination IP address is "IA6", transmitted to the IP transfer network 1400.

Please amend the paragraph bridging pages 385 through 387 to read as follows:

The relay control unit 1424 receives the signalling unit 1454 (Step S1461-2 of FIG. 273) so as to derive a signal station label contained in the signalling unit 1454 (Step S1461-3), and checks as to whether or not the address connection table 1439 contains the same record content as the derived signal station labels "DPC-3, OPC-3, SLS-3, CIC-3". In this case, since there is the coincident record in the address connection table 1439-2, the relay control unit 1424 produces an IP packet 1455 shown in FIG. 255 (Step S1461-9 of FIG. 273), and transmits the IP packet 1455 to the IP transfer network 1400 (Step S1461-10). In the IP packet 1455, the transmission IP address is "S-ad-u"; the destination IP address is "D-ad-u"; and the line number is "CIC-u". In this case, the value of the IP address "S-ad-u" is the value of the IP address "D-ad-u"; the value of the IP address "D-ad-u" is the value of the IP address "Sad-x"; and the value of the IP address "CIC-u" is the value of the IP address "CIC-x". In other words, the address of the relay station gateway

corresponds to such a value that the transmission source of the IP address of the IP packet 1452 is replaced by the destination thereof, and there is no change in the line numbers. The IP packet 1455 is reached via the control communication line 1431-2, the router 1431, and the control communication line 1431-1 to the relay control unit 1423 (Step HA13 of FIG. 250). The relay control unit 1423 receives the IP packet 1455 (Step [S1462-2] S1462-3 of FIG. 274) so as to derive the IP addresses "S-ad-u" and "D-ad-u", and the line number "CIC-u" from the IP packet 1455. Then, in the address connection table 1438, the label information "S-ad-u" is made coincident with "D-ad-x"; the label information "D-ad-u" is made coincident with "S-ad-x"; and the line number "CIC-u" is made coincident with "CIC-x" (Step S1462-4). As a result, the relay control unit 1423 produces a signalling unit 1456 shown in FIG. 256 (Step S1462-8 of FIG. 274). Next, the signalling unit 1456 is sent to the control communication line 1415 (Step S1462-9), and is reached to the relay exchanger 1412 (Step HA14). The signalling unit 1456 is transferred into the public switched telephone network 1405 and then is reached to the exchanger 1408 (Step HA15).

Please amend the first whole paragraph on page 388 to read as follows:

The relay control unit 1423 receives the IP packet to produce such a signalling unit for notifying the telephone calling operation, and then sends the signalling unit to the control communication line 1415[(Step S1462-9)]. The signalling unit is reached via the relay exchanger 1412 (Step HA24) to the exchanger 1408 (Step HA25). The exchanger 1408 notifies such a fact that the telephone unit 1421 is being called to the telephone set 1420 (Step HA26).

Please amend the header on pg. 389 to read as follows:

<<COMPLETION OF [ADDRESS] MEDIA PATH CONNECTION TABLE>>

Please amend the first whole paragraph on page 389 to read as follows:

Referring now to FIG. 249, a description will be made of a completion of [an address] a media path connection table. In the case that the relay control unit 1423 indicates the media path identifier "MP-8", the acquired external IP address "EA6" of the module in the voice control unit 1428, and the port number "5012" which is used to send the voice by the voice control unit 1428 to the voice control unit 1427, the voice control unit 1427 writes both the IP address "EA6" and the port number "5012" into the media path connection table 1429-1 (FIG. 265) so as to accomplish a media path connection table 1429-2 (refer to FIG. 267), and notifies to the relay control unit 1423 (Step 1427-2).

Please amend the paragraph bridging pages 393 and 394 to read as follows:

The terminal-to-terminal communication connection control method has been described in other embodiments, in which the telephone call is made from the telephone set 1422 via the media router 1404, the termination gateway equipped with the capsulation function 1403, the relay gateway 1402, and the public switched telephone network 1406 to the telephone set 1421. In other words, such a terminal-to-terminal communication control method in which the telephone communication is established among the telephone set 1-media router-IP transfer network [side-]public switched telephone network-telephone set 2 has already been explained in other embodiments. Another terminal-to-terminal communication connection method in which a telephone communication is established among the telephone set 2-public switched telephone network-IP transfer network-media router-telephone set 1 operable in [an] the opposite [sense] direction may be readily accomplished by way of a similar procedure to the above-explained procedure. As apparent from the foregoing description, such a terminal-to-terminal communication connection control method may be easily realized in which a telephone call is made from the telephone set 1420 via the public switched telephone network 1405, the relay gateway 1401, the termination gateway 1403 equipped with the capsulation function, and the media router 1404 to the telephone set 1422. Furthermore, such a terminal-to-terminal

communication connection control method may be easily realized in which a telephone call is made from the telephone set 1420 via the public switched telephone network 1405, the relay gateway 1401, the termination gateway 1403 equipped with the capsulation function, and the media router 1404, the UNI communication line 1419, and the public switched telephone network 1407 to the telephone set 1423.

Please amend the first whole paragraph on page 394 to read as follows:

The operations of the 14th embodiment will now be summarized. In the terminal-to-terminal communication control between two telephone sets, the information goes through the telephone set 1, the public switched telephone network 1, NNI interface communication line 1, the relay gateways 1 and 2 belonging the IP transfer network, the NNI interface communication line 2, the public switched telephone network [1] 2 and the telephone set 2 consecutively.

Please amend the first whole paragraph on page 419 to read as follows:

This example is similar to the above-explained connections of the various sorts of networks. As shown in FIG. 309, non-capsulation type termination gateways [equipped non-capsulation function] 1768x to 1771x are newly employed without using the termination gateways equipped with the capsulation function 1768 to 1771. Also, while the relay gateways 1772 and 1773 are not used, non-capsulation type relay gateways 1772x and 1773x are newly used which can be mutually communicated with the non-capsulation type termination gateways[equipped with the non-capsulation function].

Please amend the paragraph bridging pages 419 and 420 to read as follows:

As previously described, the telephone communications can be established between the telephone sets 1782 and 1785, between the telephone sets 1780 and 1785, and between the

telephone sets 1780 and 1781 under control of terminal-to-terminal communication connection controls. As explained in the above operation, the telephone communication can be carried out between the two telephone sets from the telephone set 1 via the media router 1, both the termination gateway equipped with the capsulation function and the relay gateway belonging to the IP transfer network 1, via another relay gateway and another termination gateway equipped with the capsulation function belonging to the IP transfer network 2, and the media router 2 to the telephone set 2. Furthermore, the telephone communication can be carried out between the two telephone sets from the telephone set 1 via the media router 1, both the non-capsulation type termination gateway [equipped with the non-capsulation function] and [the relay gateway equipped with] the non-capsulation [function] type relay gateway belonging to the IP transfer network 1, via another relay gateway and another termination gateway equipped with the capsulation function belonging to the IP transfer network 2, and the media router 2 to the telephone set 2.

Please amend the paragraph bridging pages 430 and 431 to read as follows:

On [receiving] finishing both the Step MS4 and the Step MS14, the multicast administration server 1857 provides a multicast identification information ID-k to the set of the transmission terminal information 1870 and the reception terminal information 1871, and then sends the information to the tree construction server 1859 (FIG. 311) (Step MS18). The tree construction server 1859 requests the resource management server 1858 for the cost table 1869 (Step MS19) thereby to obtain the cost table 1869 (Step MS20). The tree construction server 1859 determines the multicast tree structure (FIG. 318) defined by the multicast identification information ID-k using the multicast tree structure calculation module 1859-1 (FIG. 311), that is, determines the communication route of IP packet transfer by t he multicast technique, and forms the address administration table additional information (FIGS. 319 to 322) for the network node apparatuses and the route table additional information (FIGS. 323 to 325) for the routers, thereby retaining them within the tree construction server 1859 (Step MS21).

Please amend the paragraph bridging pages 442 and 443 to read as follows:

Considered below is the case that in order to report the reception of an external IP packet 1832-1 to the transmitter terminal 1810-2, the terminal 1810-11 forms an external IP packet 1833 having the transmission source external IP address "M2" and the destination external IP address "E01" thereby to send it out to the communication line 1826-1 (Step D21 in FIG. 29). On receiving the external IP packet 1833, the network node apparatus 1803 [confirms that the transmission source external IP address "M2" in the received external IP packet is a multicast address, and then] transfers the received external IP packet intact to the packet overflow communication line 1843 by the method described later. The external IP packet transferred to the packet overflow communication line 1843 is abandoned. Similarly, when the network node apparatus 1804 receives an external IP packet from the terminal 1810-14 (Step D22) or when the network node apparatus 1805 receives an external IP packet from the terminal 1810-17 (Step D23), the received external IP packet is transferred intact to the communication line 1844 or 1845. The external IP packet transferred to the packet overflow communication line 1844 or 1845 is abandoned.

Please amend the first whole paragraph on pg. 459 to read as follows:

When the internal packet output specification of an address administration table is "0", the IP packet is transferred to an overflow communication line. On the contrary, when the [packet overflow parameter] specification is not "0", the IP packet is not transferred to the overflow communication line. Here, the determination value "0" of the internal packet output specification may be replaced by another fixed value. Further, when an IP packet including a multicast IP address as the transmission source address is detected, the IP packet is abandoned, whereby the IP packet concentration to the multicast data transmission source can be avoided.

Please amend the paragraph bridging pages 474 and 475 to read as follows:

The function of the overflow communication line server and the multicast service proxy server is the same as that of the above-mentioned case of multicast IP address "M2". On receiving an IP packet from the overflow communication line 1943 (Step MPS1 in FIG. 344[, Steps R10 to R12 in FIG. 343]), the overflow communication line server 1913-3 checks whether the multicast IP address of the IP packet is "M2," "M5," or the like (Step MPS2), and then transfers it to the multicast service proxy server 1911-3 or the multicast service proxy server 1912-3 depending on the situation (Step MPS3[, Steps R13, R14 in FIG. 343]).